Environmental Safety Management Corporation
AIR QUALITY, MOLD TESTING, ERGONOMICS, OSHA

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February 22, 2021

Mr. Jason Schimpf
Business Administrator/Board Secretary
Kingsway Regional &
South Harrison Twp. Elem. School Districts
213 Kings Highway
Woolwich Twp., NJ 08085

Dear. Mr. Schimpf,

This letter summarizes the results of the February 12-15, 2021 air monitoring of the South Harrison Elementary School Gym. This assessment was conducted by Dr. Richard M. Lynch, Ph.D., CIH and Mr. Richard A. Lynch, MBA, CIEC of ESMCorp.

Executive Summary of Findings

Findings revealed that airborne mercury levels within the South Harrison Elementary School gym averaged 0.12µg/m^3 over the course of the 4-day monitoring period. All airborne mercury levels were substantially lower than the NJ Department of Health Guideline of 0.8 ug/m^3. Airborne mercury levels in surrounding classrooms and hallways were approximately equivalent to outdoor levels. No elevated health risk to students, staff or visitors from mercury exposure is suggested at this time.

I. Evaluation Criteria

The Federal OSHA and the New Jersey Public Employees Occupational Safety and Health (PEOSH) Act Permissible Exposure Limit (PEL) for airborne mercury exposure to workers (including teachers) is an 8-hour time weighted average of 0.1 milligrams per cubic meter (equivalent to 100 micrograms per cubic meter - µg/m^3) for a 40 -hour work week. The US Environmental Protection has developed an airborne exposure Reference Criteria (RfC) level for mercury vapor of 0.3 µg/m^3 for lifetime (>70 years) exposure that is unlikely to cause measurable risk for adverse, health effects. According to the EPA, this conservative criterion protects all people, including sensitive individuals, such as pregnant women and children. Based upon this the EPA RfC, Agency for Toxic Substance Research (ATSDR) recommends that schools temporarily evacuate areas with mercury exceeding 10 µg/m^3 until levels have returned to below 3 µg/m^3. The New Jersey Department of Health Guideline for mercury vapor exposure from rubberized gym floors is 0.8 µg/m^3 which is based upon protecting pre-school-aged children. At levels exceeding 0.8 µg/m^3 the NJ Department of Health recommends that schools take active steps to manage and reduce airborne mercury levels within school gyms.

II. Methods

The following methods were observed during our February 12-15 site inspection.

- On February 12, 2021, spot air monitoring was conducted at two feet and four feet above floor

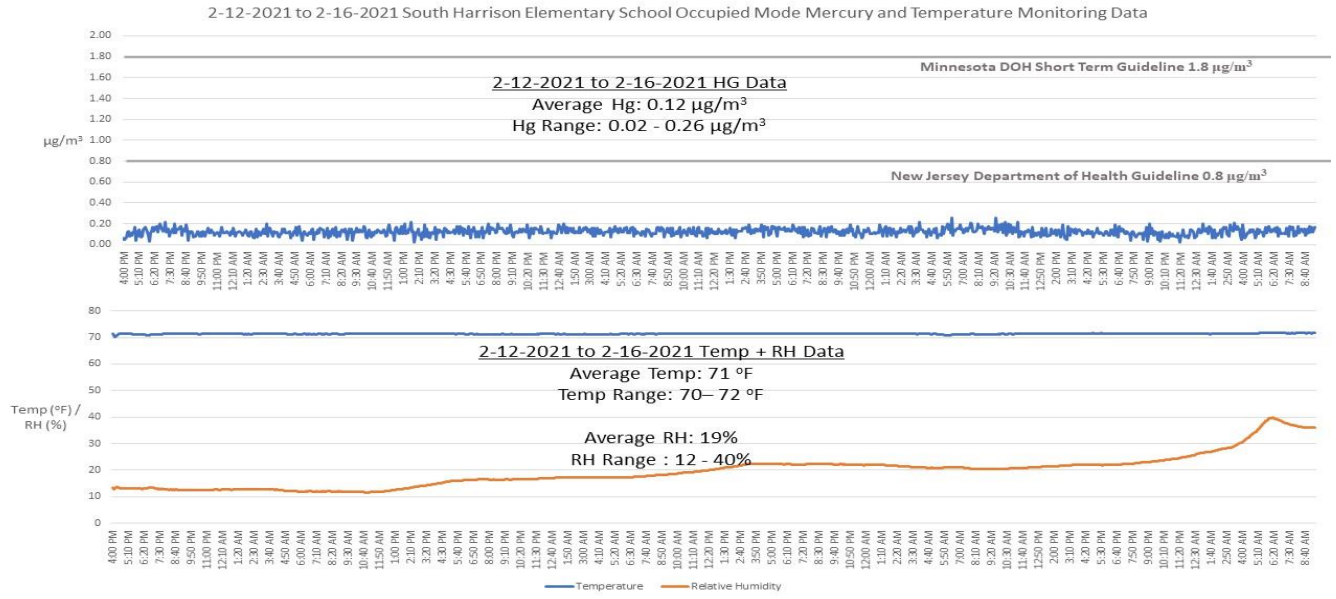
level within the gym and at four feet in surrounding hallways using a calibrated Jerome J505 Mercury Vapor Analyzer. The J505 detection limit is reported at 0.05 µg/m^3 however the meter actually reads as low as 0.00 µg/m^3 with a resolution of 0.01.

- Continuous air monitoring for airborne mercury was conducted at the center of the gym from approximately 4:00PM on Friday February 12, 2021 to 8:40AM on Tuesday February 16, 2021.
- Temperature and humidity were monitored over the same period using a TSI Q-Trak 7575 IAQ monitor.
- Gym floor temperature was estimated using a FLIR Infra Red Camera.

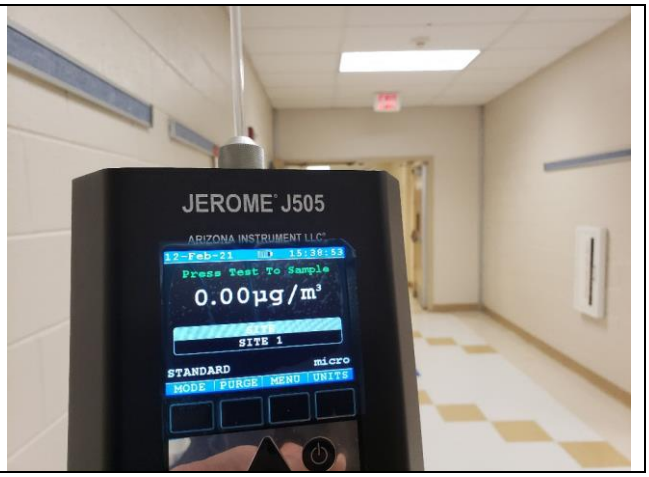
III. Mercury Air Monitoring Findings

- The gym was not in use during the monitoring period, and is instead being used for furniture storage.
- Spot airborne mercury measurements within the gym, when measured four feet from the ground, ranged between 0.03 and 0.12 µg/m^3 and averaged 0.18 µg/m^3.
- Spot airborne mercury measurements within the gym, when measured two feet from the ground, ranged between 0.05 and 0.12 µg/m^3 and averaged 0.16 µg/m^3.
- Spot airborne mercury measurements within the surrounding hallways and classrooms, when measured four feet from the ground, ranged between 0.00 and 0.08 µg/m^3 and averaged 0.03 µg/m^3.
- Ground floor temperature measured by Infrared Thermography revealed that the gym floor was approximately 67-68^{o}F at the start of the continuous monitoring period.
- Continuous air monitoring conducted at the center of the gym measured at approximately four feet above floor level revealed average airborne mercury levels of 0.12 µg/m^3 and a maximum of 0.26 µg/m^3 at an average temperature / relative humidity of 71^{o}F @ 19% relative humidity.

Continuous air monitoring findings from the February 12-16, 2021 monitoring period are shown on the Figure below:



Air monitoring findings are shown on Table #1 attached at the end of this report.



IV. Conclusions and Recommendations

Based upon these findings, it is our professional opinion that airborne mercury levels within the South Harrison Elementary School gym averaged 0.12µg/m^3 over the course of the 4-day monitoring period. All airborne mercury levels were substantially lower than the NJ Department of Health Guideline of 0.8 ug/m^3. Airborne mercury levels in surrounding classrooms and hallways were approximately equivalent to outdoor levels. No elevated health risk to students, staff or visitors from mercury exposure is suggested at this time.

Based upon these findings, the following recommendations should be considered:

1. Monthly air monitoring is recommended between March to August 2021 to determine change in airborne mercury levels as air and soil/slab temperatures change.
2. Based upon these findings, any adjustments in Heating, Ventilating or Air-Conditioning (HVAC) settings necessary to manage airborne mercury levels below 0.8 ug/m^3 should be made. This may include adjustments to thermostat set points and/or outdoor air introduction rates. We will assist you in optimizing HVAC settings.
3. Gym thermostat settings should be lowered to 68^{o}F to reduce emission of mercury from the floor beginning now, leading to our next round of monitoring which should be planned for mid-March, 2021.

ESMCorp is prepared to assist you with all of the above, and to meet with BOE members, stakeholders and others to communicate risk and management priorities.

Thank you for the opportunity to assist you with the evaluation. Please contact me with any questions.

Sincerely,
Richard A. Lynch
Richard A. Lynch, MBA, CIEC
Industrial Hygienist
NJ Licensed Indoor Environmental Consultant
www.esmcorp.com

Reviewed and Authorized:
Richard M. Lynch
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School Name **South Harrison Elementary School** Floor Temp. 67-68°F

Outdoor Mercury Concentration 0.01-0.03 µg/m^3 Outdoor Temp / Relative Humidity 29-43oF@ 39-100% RH

Average Indoor Temp / Relative Humidity

Inspected, Reviewed and Finalized by **Dr. Richard M. Lynch, Ph.D., CIH, CMC, CMRS, CHFM - President**
Richard A. Lynch, MBA, Certified Indoor Environmental Consulant

Monitoring ID	Monitoring Location	12/10/19 Mercury (µg/m^3)	2/12/21 Mercury (µg/m3) @4ft	2/12/21 Mercury (µg/m3)@2 ft
Gym	center	0.12	0.16	0.1
Gym	North Side	0.1	0.12	0.09
Gym	North East Corner	0.15	0.05	0.14
Gym	East Side	0.14	0.1	0.12
Gym	South East Corner	0.14	0.13	0.08
Gym	South Side	0.19	0.18	0.14
Gym	South West Corner	0.16	0.12	0.16
Gym	West Side	0.11	0.18	0.15
Gym	North West Corner	0.16	0.11	0.14
Stage	West	0.2	0.03	0.05
Stage	Center	0.18	0.12	0.07
Stage	East	0.16	0.09	0.12
Gym Storage	NE corner	0.13	0.11	0.12
Gym Storage	SE Corner	0.11	0.16	0.11
Gym Storage	S Side	0.12	0.11	0.12
Gym Office	S Side	0.12	0.08	0.13
	Average Gym Spot Readings	**0.14**	**0.12**	**0.12**
	Min Gym Spot Readings	**0.10**	**0.03**	**0.05**
	Max Gym Spot Readings	**0.20**	**0.18**	**0.16**

Monitoring ID	Monitoring Location	12/10/19 Mercury (µg/m^3)	2/12/21 Mercury (µg/m3)@4ft
Adjacent Room	main office	0	-
Adjacent Room	B104	0.02	0.08
Adjacent Room	B107	0.03	0.03
Adjacent Room	B112	0.01	-
Adjacent Hall	B	0.01	0
Adjacent Room	A189	0.01	0.00
Adjacent Room	A159 Isolation	-	0.04
Adjacent Room	A163	-	0.00
Adjacent Room	A191	0.03	0.05
Adjacent Room	A111	0.04	-
	Average Gym Spot Readings	**0.02**	**0.03**
	Min Gym Spot Readings	**0.00**	**0.00**
	Max Gym Spot Readings	**0.04**	**0.08**

State and Federal Mercury Exposure Guidelines(µg/m3)

PEOSHA 8 Hour PEL	ATSDR Temporary Evacuation Ceiling	New Jersey Department of Health	US EPA 70 year average reference concentration
100	10	0.8	0.3

3375 N. Delaware Street, Chandler, AZ 85225
800.528.7411 | (f) 602.281.1745 | azic.com

Certification of Instrument Calibration

AMETEK Brookfield - Capital Equipment
3375 N. Delaware St.
Chandler, AZ 85225

RMA # 2780210

This is to certify that the Jerome **J505-0005** Atomic Fluorescence Mercury Analyzer, Serial Number **50500158**, was calibrated with standard units traceable to NIST.

Calibration Status as Received: **N/A**

	Actual	Calibration Gas	Allowable Range
Incoming:	µg/m3 Hg % RSD	µg/m3 Hg	- µg/m3 Hg <5%
Outgoing:	25.48 µg/m3 Hg 0.47 % RSD	25.00 µg/m3 Hg	23.75 - 26.25 µg/m3 Hg <3%
Calibration Verification:	µg/m3 Hg % RSD	0.300 µg/m3 Hg	0.255 - 0.345 µg/m3 Hg <15%

Calibration Status as Left: **In Calibration**

Estimated Uncertainty of Calibration System: 3.5%

Calibration Date: 01-Oct-2020 Recalibration Date: 30-Sep-2021

Temperature °F: 72.10 % Relative Humidity: 31.00

Approved By: Cheryl Hradek Date Approved: 05-Oct-2020
Title: Cheryl Hradek - Quality Control

Equipment Used:

Permeation Tube: S89-56540 **NIST#:** ISO13265; 072958
Calibration Date: 12-Nov-2019 **Calibration Date Due:** 12-Nov-2020

DynaCalibrator: MU-1407 **NIST#:** 19-3004
Calibration Date: 08-Nov-2019 **Calibration Date Due:** 09-Nov-2020

Digital Multimeter: 66961028 **NIST#:** 7003135
Calibration Date: 24-Feb-2020 **Calibration Date Due:** 24-Feb-2021

Mass Flow Controller: 63665 **NIST#:**227080
Calibration Date:27-Mar-20 **Calibration Date Due:** 27-Mar-21

Calibration Procedure Used: 730-0165

AMETEK Brookfield certifies that the above listed instrument meets or exceeds all published specifications and has been calibrated using standards whose accuracy is traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY within the limitations of the Institute's calibration services, or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of self-calibration techniques.
Disclaimer: Any unauthorized adjustments, removal or breaking of QC seals, or other customer modifications on your Jerome Analyzer WILL VOID this factory calibration, because any of the above acts could affect the calibration and readings of the instrument. Further, AMETEK Brookfield WILL NOT be responsible for any liabilities created as a result of using the instrument after such adjustments, seal removal, or modifications.

RMA E20